

## CLAIMS

We claim:

1. A breathable polypropylene/filler film comprising:  
an impact copolymer polypropylene precursor film; and  
a filler present in said precursor film in the range of from about 20%  
to about 70% by weight, based on the total weight of said film,  
wherein said film has a dart impact strength in the range of from about 100  
to about 300 grams,  
wherein said film has an Elmendorf tear strength in the range of from about  
20 to about 300 grams,  
wherein said film has a WVTR in the range of from about 100 to about  
10,000 gm/m<sup>2</sup>/24 hrs at 37.8°C, and  
wherein said film has an MD or TD elongation in the range of from about  
150% to about 550%.

2. The breathable polypropylene/filler film as defined in Claim 1 wherein  
said impact copolymer polypropylene film is selected from a group consisting of a  
random copolymer polypropylene, an impact copolymer polypropylene, a  
metallocene catalyzed polypropylene, and combinations thereof.

1           3.     The breathable polypropylene/filler film as defined in Claims 1 or 2,  
2     wherein the filler is selected from the group consisting of calcium carbonate, talc,  
3     clay, kaoline, silica, diatomaceous earth, magnesium carbonate, barium carbonate,  
4     magnesium sulfate, barium sulfate, calcium sulfate, aluminum hydroxide, zinc oxide,  
5     magnesium hydroxide, calcium oxide, magnesium oxide, titanium oxide, alumina,  
6     mica, glass powder, zeolite, silica clay, and combinations thereof.

1           4.     The breathable polypropylene/filler film as defined in Claim 1, wherein  
2     said filler is calcium carbonate, said calcium carbonate being present in said film in  
3     the range of from about 30% to about 60% by weight, based on the total weight of  
4     said film.

1           5.     The breathable polypropylene/filler film as defined in Claim 1, wherein  
2     said film additionally includes at least a second polymer component selected from  
3     the group consisting of low density polyethylene, linear low density polyethylene,  
4     metallocene catalyzed polyethylene, styrene-isoprene-styrene, styrene-butadiene-  
5     styrene, ethylene propylene elastomeric polymers, ethylene propylene diene  
6     elastomeric polymers, and combinations thereof.

1           6.     The breathable polypropylene/filler film as defined in Claim 1, wherein  
2     the film is laminated to a non-woven polymeric material by a method selected from

1 the group consisting of adhesive lamination, heat lamination, ultrasonic lamination,  
2 and combinations thereof.

1 7. The breathable polypropylene/filler film as defined in Claim 1 or Claim  
2 6 wherein said film or said combination of film and non-woven polymeric material  
3 is formed into a fabricated article selected from the group consisting of diapers,  
4 adult incontinence devices, feminine hygiene articles, surgical garments, surgical  
5 drapes, sportswear, industrial apparel, house wrap, filtration media, roofing  
6 components, and controlled atmosphere packaging.

1           8     A breathable polypropylene/filler film comprising:  
2                     an random copolymer polypropylene precursor film; and  
3                     a filler present in said precursor film in the ratio with said  
4                     polypropylene in the range of about 30% to about 60% by weight, based on  
5                     the total weight of said film,  
6                     wherein said film has a dart impact strength in the range of from 100 -- 300  
7     grams,  
8                     wherein said film has an Elmendorf tear strength in the range of from about  
9     20 to about 300 grams,  
10                    wherein said film has a WVTR in the range of from about 100 to about  
11     10,000 g/m<sup>2</sup>/24 hr, and  
12                    wherein said film has an MD or TD elongation in the range of from about  
13     150% to about 550%.

1 *sub B1* 9. A method of making a microporous breathable film comprising the  
2 steps of:

3 selecting a film forming ~~a~~ polyolefin precursor, said polyolefin  
4 precursor having polypropylene as a majority component;

5 blending said film forming polyolefin precursor with a filler which is a  
6 rigid material having a low affinity for the polyolefin precursor and a lower elasticity  
7 than the polyolefin precursor, and having a non-smooth hydrophobic surface such  
8 that the filler is about 30% to about 70% of the combined weight of the filler and the  
9 polyolefin precursor;

10 combining said polyolefin precursor/filler blend with an additive  
11 selected from a group including a plastomer, an elastomer, a styrenic block co-  
12 polymer, a rubber or a combination thereof; and

13 stretching the combination of said blended polyolefin/filler blend and  
14 said additive to form interconnected voids.

1 10. The method as defined in Claim 9 wherein said step of stretching the  
2 combination uses interdigitating grooved rollers.

1 11. The method as defined in Claim 10 wherein said interdigitating  
2 grooved rollers are positioned in a direction selected from the group consisting of  
3 machine direction (MD), transverse direction (TD), and a combination thereof.

1           12. The process as defined in Claim 9 wherein said film forming polyolefin  
2 precursor is selected from the group consisting of an impact copolymer  
3 polypropylene, a random copolymer polypropylene, and a combination thereof.

1           13. The method as defined in Claim 9 wherein said filler is selected from  
2 the group consisting of calcium carbonate, talc, clay, kaoline, silica, diatomaceous  
3 earth, magnesium carbonate, barium carbonate, magnesium sulfate, barium sulfate,  
4 calcium sulfate, aluminum hydroxide, zinc oxide, magnesium hydroxide, calcium  
5 oxide, magnesium oxide, titanium oxide, alumina, mica, glass powder, zeolite, silica  
6 clay and combinations thereof.

106 ✓ 1           14. The method as defined in Claim 9 further including the step of  
2 laminating the microporous breathable film to a non-woven polymer.

1           15. The method as defined in Claim 14 further including the step of  
2 forming said combination of microporous breathable film and non-woven polymer  
3 into an article selected from the group consisting of <sup>1st</sup>diapers, <sup>1st</sup>adult incontinence  
4 devices, <sup>1st</sup>feminine hygiene articles, <sup>2nd</sup>surgical garments, surgical drapes, sportswear,  
5 industrial apparel, house wrap, filtration media, roofing components, and controlled  
6 atmosphere packaging.

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